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OF SPLINTS

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Page 4.

Line 6 from bottom - "Sprint" should read "Splint".

Page 6.

A Group read "abducted" should read "Splint".

Page 14.

B " " adducted".

Known as "Thomas's Knee Splint" refers to fig. 24.

Figs. 25 - 29 "Thomas's Knee Splint Outfit" refers to fig. 24.

Second line " " between "thigh" and "leg" should read " & ".  
E.E.F. pattern)



# CATALOGUE & VOCABULARY OF SPLINTS,

MANUFACTURED AT

R. A. M. C. CENTRAL SPLINT FACTORY.

E. E. F.,

COMPILED FOR A. D. M. S. ALEXANDRIA DISTRICT,

BY

GEORGE R. LIVINGSTON M.D., F.R.C.S.E.,

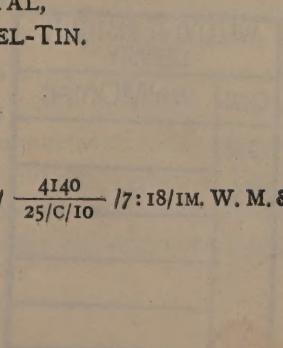
MAJOR R. A. M. C., (T. F.,)

OFFICER IN CHARGE SPLINT FACTORY.

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CENTRAL SPLINT FACTORY,  
21st GENERAL HOSPITAL,  
RAS-EL-TIN.

A. P. & S.D., Alex. /  $\frac{4140}{25/C/10}$  / 7:18/IM. W. M. & Co.



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## INTRODUCTION.

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In compliance with numerous requests for an illustrated catalogue of Splints and Appliances manufactured at the R.A.M.C. Central Splint Factory, E.E.F., an attempt has been made to compile an illustrated guide for the use of Officers indenting for Splints. From time to time a manuscript list of splints has been issued showing where illustrations may be found, but this has been found inadequate.

In issuing such a catalogue reference must be made to the origin and evolution of the Splint Factory. As an illustration of the adaptability of the organisation of the Army Medical Department the history of this workshop, run by Medical Officers, is worthy of record. After the first landing at Gallipoli there was a great demand for splints of all sorts. Major Hey-Groves arrived at Alexandria with the 21st General Hospital on May 25th, 1915, and a small room was set apart as a workshop in charge of an English mechanic, assisted by two native smiths and a native carpenter. Under Major Hey-Groves' direction the work developed, and it was found necessary to have a larger workshop, and in October of the same year the present workshop was opened, the native staff being increased to eight smiths and four carpenters, and Mr. Richardson (late of the A.S.C.) was appointed to take charge of the stores and superintend the native workmen. The work continued to increase and it was found necessary to further augment the staff. The men worked from 6.30 a.m. to 10 p.m., Sundays included, until the pressure of work was overcome. All outstanding orders having been completed by February, 1916, the English mechanic's services were dispensed with, and the native staff reduced. Major Hey-Groves on his transference to England was succeeded by Colonel Edington as Officer in charge of the Splint Factory, Mr. Richardson continuing to act in the capacity of Works Manager. A lull for a few weeks was broken by a rush of urgent orders, and the work has continued steadily increasing until at the beginning of 1918 it was found necessary to make an addition to the present building. Since the commencement about 50,000 splints of all sorts have been issued from the Factory and distributed to Egypt, Macedonia, Mesopotamia, East Africa, and some of the Hospital-ships. The average output during the last three months has exceeded 4,500 articles per month. Standard

splints are made from patterns originally obtained from England, and in the case of Major Hey-Groves' splints they are made from patterns made by Major Hey-Groves' mechanic under his direct supervision.

One of the chief difficulties confronting the Officer in charge of the Splint Factory is the question of nomenclature. Many and various are the systems of nomenclature, and many indents cannot be attended to immediately because it is impossible to know what is really required. To attempt a scientific classification of splints is impossible, and they are here grouped as they are grouped at the Central Splint Factory, and the nomenclature is one which if adopted by Officers indenting for splints, will be at once understood there. A time seems to have come when the association of Surgeons names with certain splints should be discontinued. It is at present the custom to associate the name of the Surgeon describing a new splint with his splint. Since the commencement of the war at least 50 new splints or modifications of old splints have been introduced, in all of which the inventor's name has been attached. Sometimes the name of the Surgeon suggesting the modification is given, sometimes the name of the Surgeon whose description first found its way into Surgical Literature is applied to the splint, thus one apparatus may have several different names. This gives rise to endless confusion. It has been suggested that the publication of this Catalogue will perhaps discourage Medical Officers in the sphere of designing new splints by showing standard models, many of the new designs being inferior to those which have already stood the test of practical experience, and if Medical Officers see a splint suitable for their purpose illustrated in the Catalogue they will indent for it rather than design a new splint. It is not desired to discourage all attempts to make improvements or to design new apparatus, but it is pointed out that an enormous amount of time and labour is entailed in working up new designs, many of those submitted being sketchy ideas devoid of detail, and if a well-known standard splint can be used it is certainly more economical at the present time. It is realised that there are a large number of cases in which special appliances are necessary, and in these cases very clear and accurate drawings and minute particulars should be sent to the Officer i/c Sprint Factory with the indent.

It is not perhaps generally known that Medical Officers on leave in Alexandria, or passing through, can see the Factory and obtain information regarding the splints issued. Such personal inspections of the work carried on in the Splint Factory are of great assistance to the Officer in charge and are very cordially welcomed.

It should be clearly understood that this publication is not a complete catalogue of splints; it merely contains those manufactured at the Factory in compliance with indents received, and it may, therefore, be taken as a fair indication of the appliances at present finding favour among Medical Officers responsible for the splint equipment from the dressing stations to the Base Hospitals in the E.E.F.

No attempt has been made to explain the methods of using Splints, for which M.O.'s are referred to—

"NOTES ON MILITARY ORTHOPÆDICS,"  
By Colonel Robt. Jones, C. B.

"MEMORANDUM ON TREATMENT OF INJURIES IN WAR,"

"THE TREATMENT OF GUNSHOT FRACTURES",  
By Major Hey-Groves, "Lancet" April 29th, 1916.

"SOME OF THE PRINCIPLES AND PROBLEMS RELATED TO THE  
TREATMENT OF GUNSHOT FRACTURES,"  
By Major Hey-Groves. "B. M. J." July 15th, 1916.

Indents should, in future, have name shown in Catalogue and No. of figure.

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## Classification of Splints adopted at the Splint Factory.

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### UPPER EXTREMITY.

#### I. ARM SPLINTS.

- A. Group in which arm is Adducted.
- B. Group in which arm is Abducted.

#### II. FOREARM SPLINTS.

##### (a). Rectangular Splints :

- (1). Without }
- (2). With }

Extension Mechanism.

##### (b). Local Fixation Splints :

1. Arm or forearm local Splints.
2. Joint Fixation Splints.
  - (a) Elbow Joint Splints.
  - (b) Wrist Joint Splints.
3. Hyper-Extension Splints (or Hand dorsi-flexion Splints).
4. Splints for Fractures in neighbourhood of Wrist Joint, including digits.

### LOWER EXTREMITY.

#### I. APPARATUS FOR CONTROLLING TRUNK AND LOWER LIMBS (Vertebral Limb Splints.)

Splints in this group control vertebral column and lower limbs and are useful in cases of spinal injuries and injuries in region of hip joint.

#### II. THIGH SPLINTS FOR USE IN THE FIELD.

#### III. APPLIANCES FOR SWINGING LIMBS, etc.

#### IV. THIGH SPLINTS.

#### V. BED CAGES TO CARRY PRESSURE OF BED CLOTHES OFF LIMB, etc.

#### VI. LEG SPLINTS.

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## UPPER EXTREMITY.

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### I. ARM SPLINTS.—A. Group in which Arm is abducted.



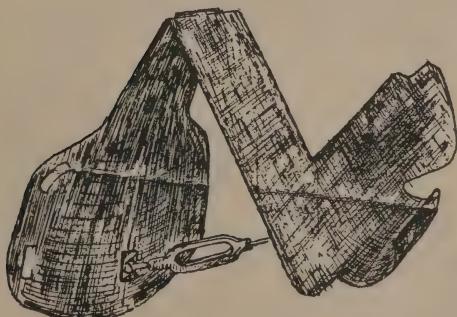
**Fig. 1.**

Similar to but of lighter metal than Thomas's Knee Splint.

Known as "Arm Modified Thomas Straight."

Position of Limb extended and abducted.

This Splint is suitable for fractures in middle and lower third of Humerus, the patient being recumbent. As arm is abducted this Splint is not suitable for cases requiring to be transported. This Splint is suitable for either side, and can be made with adjustment to allow arm to be brought to side for transport.



**Fig. 2.**

This Splint is adjustable, a screw, or ratchet, varies the amount of abduction; the body portion of the Splint is held in position by a body strap, and a strap over the sound shoulder. It belongs to the abduction group of arm Splints; the arm portion with forearm support is so formed that the arm is carried slightly forwards, and rotated slightly inwards.

"Known as **Arm Abduction Splint.**"

There are a considerable number of modifications of this Splint. Whenever patterns other than those shown in this catalogue are indented for, accurate drawings and measurements should invariably be forwarded with indent. As far as possible special patterns of Standard Splints should be avoided.

It is obvious that indents should indicate whether for right or left side.

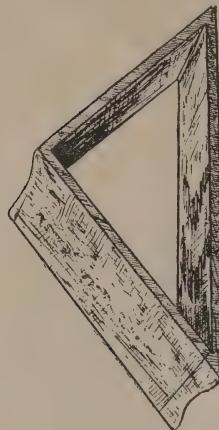


Fig. 3.

**"Axillary Triangle" (wooden).**

This Splint is made in three sizes, and if desired can be made adjustable, so that amount of abduction of arm can be varied. These triangles will do for either left or right arm. It is also made with wire support for arm so that a wound may be dressed without taking the limb off the Splint.

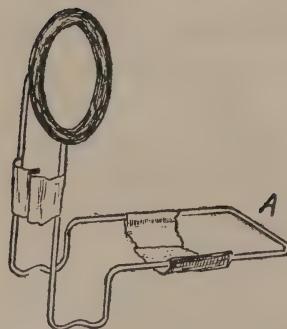


Fig. 4.

All the Splints in this group allow of extension.

Known as "**Arm Modified Thomas's Angular.**"

Arm is adducted, Elbow flexed,  
**palm of hand directed upwards**  
and grasps bar A.

This Splint is useful in the Field.  
Indents should indicate side for which the Splint is required.

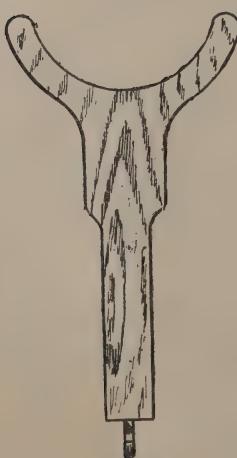


Fig. 5.

Known as "**Arm Crutch Splint.**"

**Fig. 5.** Wooden.

**Fig. 6.** Wire Skeleton.

This Splint will do for either  
right or left side.

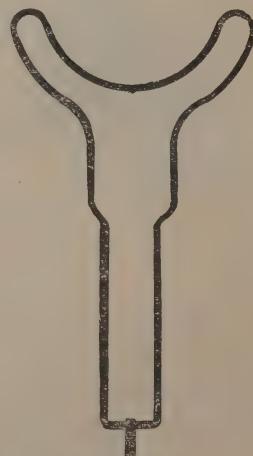


Fig. 6.

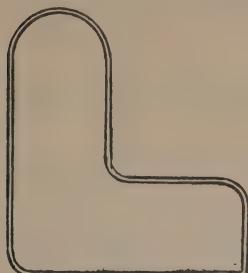


Fig. 7.



Fig. 8.

**"Wire Cradle Arm Splint".**

There are two patterns of this splint. With shoulder bar Fig. 7 and with axillary bar Fig. 8.

Fig. 7 can be used for either right or left limb, Fig. 8 with axillary bar is made for right side and for left side. It is important to note this point in indenting for Splints with axillary bar.

Fig. 7 and Fig. 8 show probably the most useful form of Arm Splint for use in the Field.

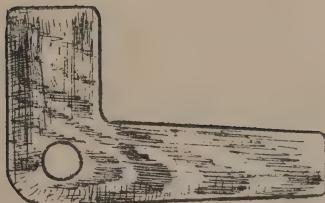
**II. FOREARM SPLINTS.—(a.) Rectangular Splints.****(I) Without Extension Mechanism.**

Fig. 9.

**"Internal rectangular Splint."**

Hollowed out for arm and forearm. Very extravagant as regards wood. Indents should show whether for left or right side; a wire model can be made.

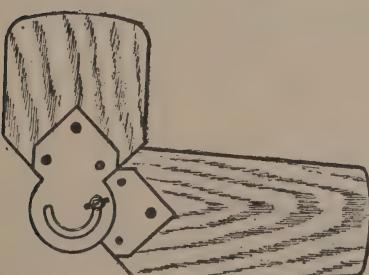


Fig. 10.

**"Internal rectangular Splint, wooden, with metal adjustable joint."**

Can be fixed at any angle and used for either side.

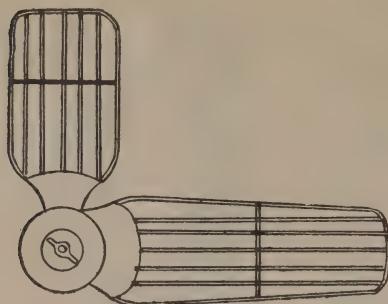


Fig. II.

Similar to above (Fig. 10) made of wire with metal joint.

Wood suitable for Splints is difficult to obtain. There is at present ample supply of suitable wire, and, whenever possible, wire Splints should be indented for.

(2).<sup>1</sup> With Extension Mechanism.

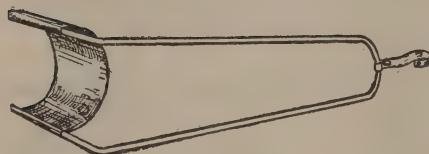


Fig. 12.

**"Anterior Angular Extension Splint."**

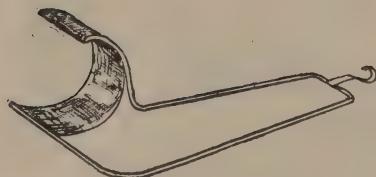


Fig. 13.

**"Antero-internal Angular Extension Splint."**

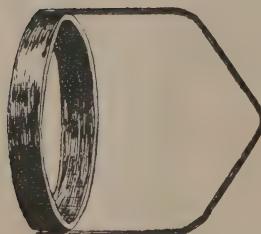


Fig. 14.

Hand-piece for attachment of Extension Strapping.

Similar Extension Splints made in wood are not at present manufactured at the Central Splint Factory as they are very wasteful as regards wood.

These Splints (Figs. 12 and 13) are not suitable for Field work and transport.

## (b). Local Fixation Splints.

## (1). Arm or Forearm Local Splints.



Wire Straight (in pairs).

Known as "Haversack Splints."

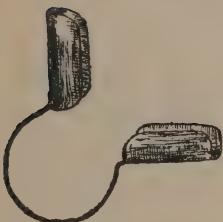
Fig. 15.

Suitable for application to Arm as lateral Splints, or as antero-posterior in forearm. These Splints are most useful in the Field. At present time easily supplied, while similar wooden Splints cannot be readily issued from the Splint Factory.

## (2). Joint Fixation Splints.

## (a). ELBOW JOINT SPLINT.

Known as "Elbow Fixation Splint."



Immobilises elbow joint but allows access to it.

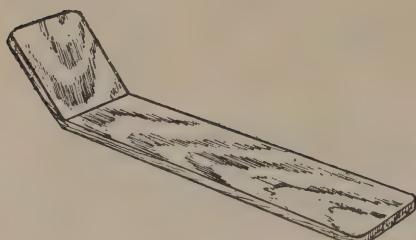
Fig. 16.

Trough portion of Splint may be made of poroplastic, and some surgeons prefer this modification. The Standard Splint issued from the Splint Factory is all metal. Special Splints invariably entail delay, and in making out indents M.O.'s should keep in view this fact, and unless some very marked benefit is to be derived it is suggested standard patterns be indented for. It can be made adjustable so that angle may be varied.

## (b). WRIST JOINT SPLINTS.

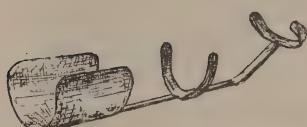
A similar splint is sometimes asked for to immobilise wrist joint and allow access to it. Very careful measurements should be supplied in the exceptional cases requiring such an appliance. When possible the patient should be sent to the Splint Factory to have the appliance fitted.

(3). Hyper-Extension Splints or Hand Dorsi-flexion Splints  
*Also known as Relaxation Splints.*



= Wooden Pattern.

Fig. 17.



= Metal Pattern.

Other designs can be made with thumbpiece but the observations above regarding special designs apply equally here also.

Fig. 18.

(4). Splints for fractures in the neighbourhood of the wrist joint.

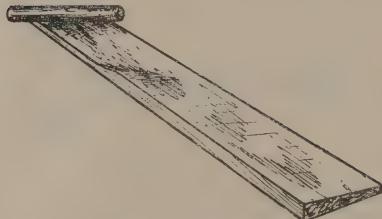


Fig. 19 shows Special splint for anterior aspect (a dorsal Splint is used but is not figured). These are put up in pairs. For work in the Field this Splint has no advantage over that shown in Fig. 15.

Fig. 19.

They are wasteful as regards wood and require an amount of labour which appears to be out of proportion to their advantages.

## LOWER EXTREMITY.

### I. APPARATUS FOR CONTROLLING TRUNK AND LOWER LIMBS (Vertebral Limb Splints).

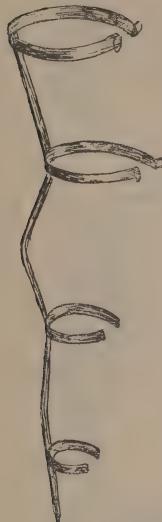


Fig. 20.

This group of Splints contains all those designed to control the vertebral column and lower limbs.

They are useful in cases of spinal injuries and in injuries about the region of the hip joint. Special modifications are made as shown in Figs. 22 & 23 for access to hip joint. Provision when specially ordered is made to allow a variable amount of abduction by introduction of a joint at A in Figs. 21, 22, 23.

Known as "Thomas's Hip Splint."

A double "Thomas, Hip Splint" is made but not illustrated. It is most useful in fractures of lower spine and pelvis.

Indents should show measurement from nipple to external malleolus ; no other measurement is required for this Splint.

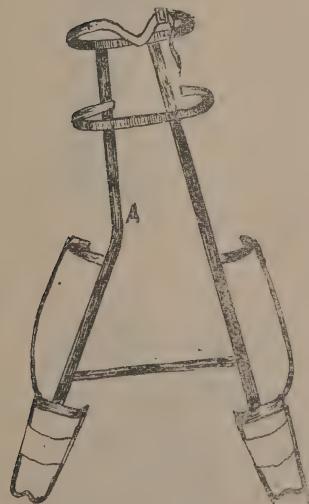


Fig. 21.

Fig. 21 Abduction Frame (Jones').

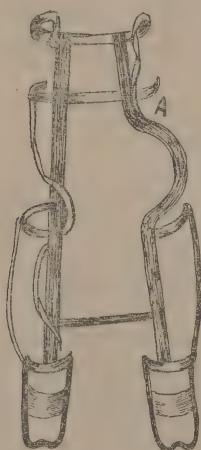


Fig. 22.

Fig. 22 Abduction Frame (Jones') providing access to hip joint.  
Fig. 23 Abduction Frame made in wood.

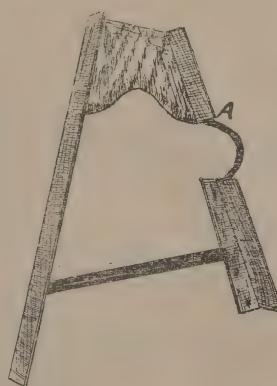


Fig. 23.

Abduction Frame measurements, when required of standard patterns, are nipple to external malleolus, and circumference at level of nipples.

The Boulogne Box, Phelp's Box, belong to this group ; they are not illustrated, as so far very few indents have been received for them. Very careful drawings and accurate measurements should be sent when they are indented for.

## II. THIGH SPLINTS FOR USE IN THE FIELD.

Known as "Thomas's Knee Splint."

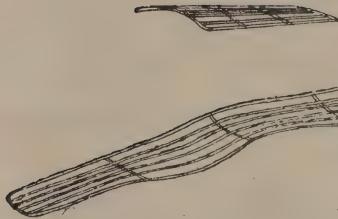


Fig. 25.

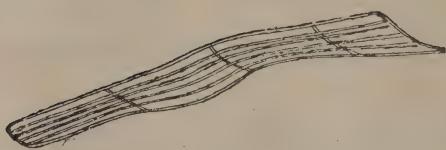


Fig. 26.



Fig. 24.

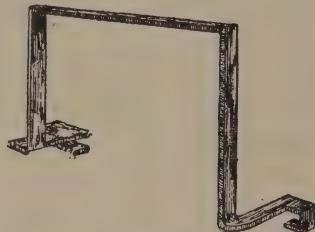
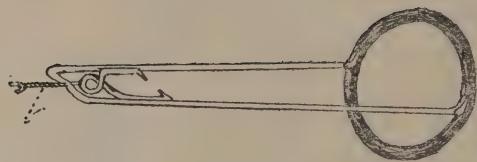


Fig. 28.



Screw adjustment.



Fig. 29.

Figs. 25-29 "Thomas's Knee Splint Outfit" (E.E.F. pattern).

Anterior thigh Splint, wire Fig. 25.

Posterior thigh sleg Splint, wire Fig. 26.

Thomas's Knee Splint } Fig. 27.

\*Screw extension and boot grip } Fig. 27.

\*Stretcher Bridge Carrier Fig. 28.

Foot Piece (same as supplied } Fig. 29.  
with Major Hey Groves' Splint.)

\*The pattern of screw extension and boot grip figured has been superseded by a more recent and simpler type, and a collapsible bridge carrier can be supplied for the forward line.

### III. APPLIANCES FOR SWINGING LIMBS.

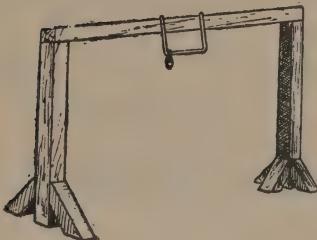


Fig. 30.

There are a very large number of contrivances for this purpose. In hut hospitals supports can often be fixed to rafters. In many cases, extension supports which can be fixed to the bed can be used to swing a limb. Where a Thomas's Splint is used a wooden support with pulley for weight extension can be supplied.

Known as "**Balkan Splint Support.**"

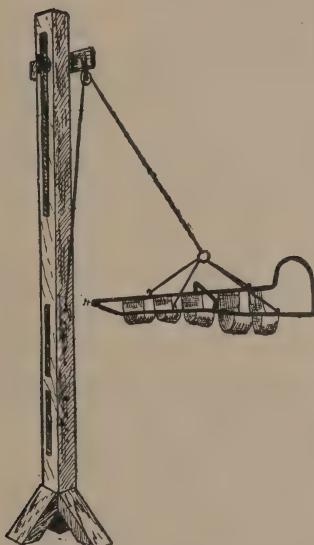
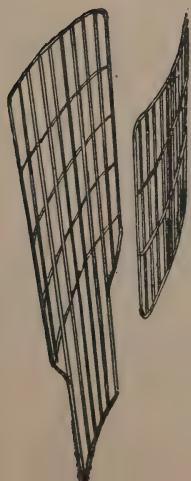


Fig. 31.

**Upright for Hodgen's Splint.**

Balkan Support can be used for Hodgen's Splint, and as there is less work upon it, it is more economical at present.



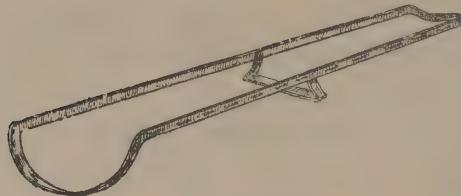
Short Splints are made in wire moulded for thigh.

Known as "**Splint Thigh Short Wire.**"

These Splints are put up in pairs, anterior and posterior.

Fig. 26 under THOMAS'S KNEE SPLINT OUTFIT shows a wire "posterior thigh and leg splint" moulded to curve of thigh and calf of leg.

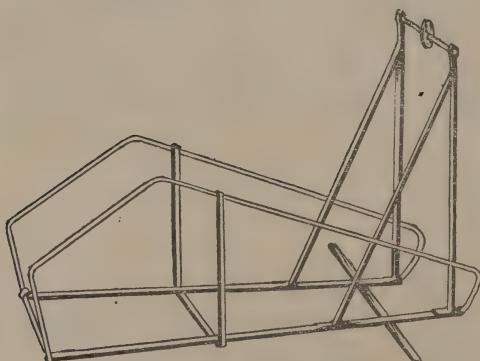
Practically any Splint can be made in wire, but any departure from the standard models require special moulds ; in most cases several moulds have to be made. At the present time there is a plentiful supply of wire available for the manufacture of Splints. All other materials are at present more difficult to obtain than wire.



**Fig. 33.**

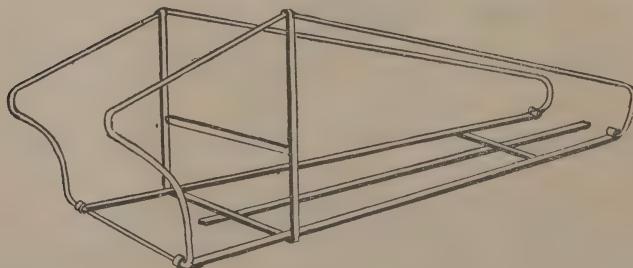
Aluminium is very costly at present and only a small stock is at present available.

Its chief advantage is that Splints can readily be made by any M.O. It is not suitable for long Splints with tie on extension in the case of a heavy limb, as it tends to bend.



**Fig. 34.**

**Wire Cradle Splint, short pattern  
(with Extension Apparatus).**



**Fig. 35.**

**Wire Cradle Splint,  
long pattern.**

Extension Apparatus is not here shown, but the mechanism shown in Fig. 34 fits this Splint.

In indenting for these Splints M.O.'s should bear in mind that it is not necessary to have Extension Apparatus for every Splint, also that a foot piece is

required for each Splint. Rubber slings are only supplied with the Splints if indented for, as many surgeons prefer to use slips of flannel bandage.

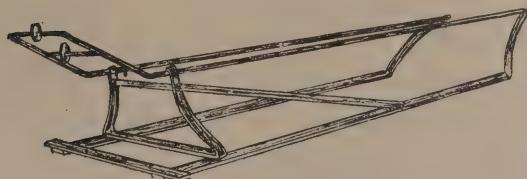


Fig. 36.

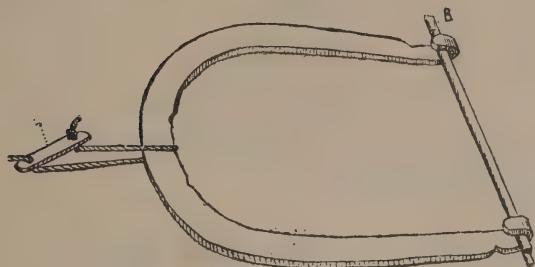
**Hinged Leg Splint.**

Fig. 37.

**Transfixion pin and Horse-shoe claw.**

(with Extension Cord).

For Transfixion Extension.

Transfixion pin A B is now being made with a screw in centre so that when it is desired to remove the pin it can be removed in two parts, and the risk of infecting the track is minimised.

## V. BED CAGES.

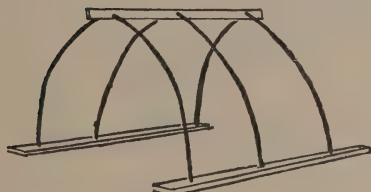


Fig. 38.

Ordinary Bed Cage made in two sizes :

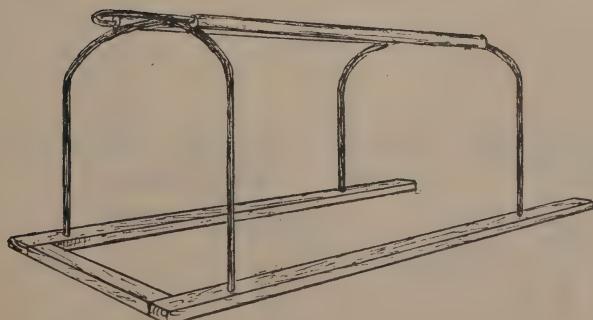
**Leg Bed Cradle,****Abdominal Bed Cradle.**

Fig. 39.

**Lawrence Cradle** for use with Neville's Splint is useful; in any case in which it is desired to Swing, a leg whether Neville's Splint is used or not.

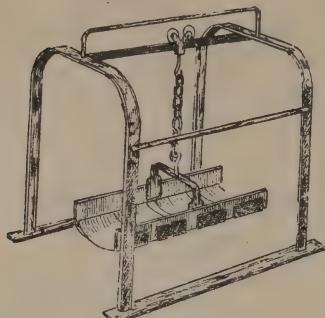


Fig. 40.

**Salter's Cradle.**

These have a very great deal of work upon them, and are only suitable for base hospitals, and take a considerable time to manufacture. They are however often indented for.

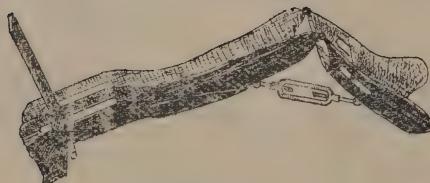
**VI. LEG SPLINTS.**

Fig. 41.

**Mac Intyre Splint**

Requires a great deal of work and material is not always available. It often appears on indents.

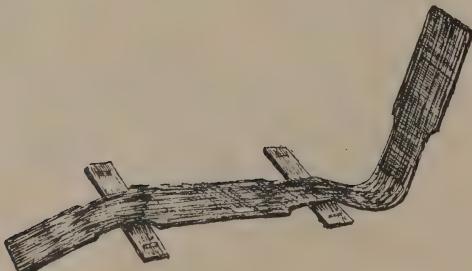


Fig. 42.

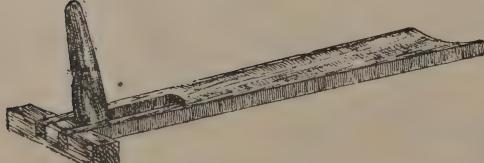
**Neville's Splint.**

Fig. 43.

**Posterior Leg Splint with adjustable Foot Piece.**

Wooden pattern.

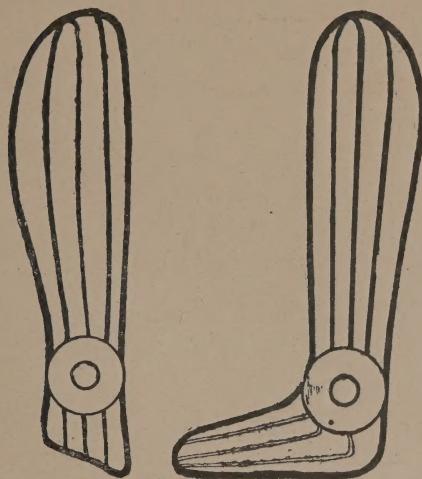


Fig. 44.

**Lateral Leg Splints, wire.**



Fig. 45.

**Skeleton Ankle Splint.**



Fig. 46.

**Folding Stretcher**

**Support**, for use in advanced units, or mobile operating units, where it is desired to operate upon the patient without removing him from the stretcher. A hot water tin is fitted in the centre.







